

### **REMARKS**

Applicants thank the Examiner for total consideration given the present application. Claims 1-7 and 9-11 were pending prior to the Office Action. Claims 12-15 have been added through this Reply. Thus, claims 1-7 and 9-15 are currently pending of which claims 1 and 9-12 are independent. Claims 1, 4-7, and 9-11 have been amended through this Reply. Applicants appreciate that the previous arguments filed on July 6, 2006 were found persuasive. However, claims 1-7 and 9-11 now stand rejected under a new ground(s) of rejection. Applicants respectfully request reconsideration of the rejected claims in light of the remarks presented herein, and earnestly seek timely allowance of all pending claims.

#### **35 U.S.C. § 112, 2nd Paragraph Rejection**

The Examiner rejects claims 4-6 under 35 U.S.C. § 112, second paragraph, by alleging that the claims do not particularly point out and distinctly claim the subject matter which the Applicants regard as their invention. Particularly, the Examiner alleges, "claims 4-6 lacks an antecedent basis for ". . . of the latest behaviors"". Further, the Examiner alleges, "it is also unclear with regarding "the latest behaviors" because the applicant fails to particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention – there is no definition about a so-called "behavior" – it is vague and a very broad limitation (i.e., what is behavior that the applicant wants to claim – why not point it out)." In addition, the Examiner alleges that "it is unclear for ". . . larger than the specific threshold. value." (*See page 4, section 4 of the Office Action.*) Applicants respectfully disagree with the Examiner's allegations and thereby traverse the rejection.

Applicants respectfully submit that the Examiner's focus during examination for compliance with the requirement of definiteness in § 112, second paragraph is whether the claim meets the threshold requirements of clarity and precision. To do this, the Examiner needs only ensure that the claims define the invention with a reasonable degree of particularity and distinctness. *See M.P.E.P. § 2173.02.*

Applicants submit that the claims clearly point out and distinctly claim the subject matter of the invention. The instant specification clearly discloses on page 15, lines 14-19 that specific

behavior of the ship relates to a motion of the ship's head in a horizontal plane (yawing) from a point in time at which deviation ( $\theta - \theta_0$ ) of the ship takes a maximal value to a point in time at which the deviation ( $\theta - \theta_0$ ) takes another maximal value. On page 16, lines 22-24, the specification discloses, "The start timing and the end timing of each ship behavior (yawing cycle) are sequentially supplied from the behavior detector 52 . . ." There are other descriptions in the specification where "behavior" has been identified as "yawing". Further, on page 18, lines 14-15, the instant specification clearly discloses that the latest behavior cycles refer to the 5 cycles as shown in Fig. 7. Therefore, it is respectfully submitted that term "behavior" as recited in claims 4-6 is not vague.

Although Applicants do not necessarily agree with the Examiner that claims 4-6 are indefinite, these claims have been amended merely to expedite prosecution. Accordingly, Applicants respectfully request that the Section 112, second paragraph rejection of claims 4-6 be withdrawn.

35 U.S.C. § 102 REJECTION - Wesner

Claims 1 and 9 stand rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Wesner (USPN 3,604,907). Applicants respectfully traverse this rejection.

For a Section 102 rejection to be proper, the cited reference must teach or suggest each and every claimed element. *See M.P.E.P. 2131; M.P.E.P. 706.02*. Thus, if the cited reference fails to teach or suggest one or more elements, then the rejection is improper and must be withdrawn.

In this instance, Wesner fails to teach or suggest each and every claimed element. For example, amended independent claims 1 and 9 recite, *inter alia*, "detecting a period of a yawing motion of the ship; . . . calculating the amount of variations of the period of the yawing motion of the ship based on a plurality of periods of the yawing motions." *Emphasis added*. It is respectfully submitted that nowhere does Wesner teach or suggest the above-identified claim feature.

Wesner merely discloses a conventional computer apparatus for use in navigable craft for providing a steering command signal in response to a heading error signal wherein a threshold

circuit provides a first signal when the magnitude of the heading error signal is not in excess of a threshold and a second signal when the magnitude thereof exceeds the threshold. Wesner further discloses gain-controlling circuits for effecting a first computer gain in response to the second signal and a lower gain in response to the first signal and means for adjusting the threshold in accordance with yawing motion of the craft. (*See Abstract.*)

Wesner is distinguished from the claimed invention in that in Wesner, the gain-controlling circuits neither detect a period of a yawing motion of the craft nor calculates the amount of variations of the period of the yawing motion of the ship based on a plurality of periods of the yawing motions of the craft.

In FIG. 1, Wesner discloses two switches 30 and 52, which are ganged together, and positioned to adjust the respective gains of the integral and rate channels of the computer in accordance with the dynamic characteristics of the ship in which the system is installed and in accordance with the ship's loading. In addition, the switch 53 is positioned to adjust the time constant of the filter associated with the differentiator channel 40 in accordance with these parameters. (See col. 6, lines 33-41.) Particularly, Wesner discloses a threshold circuit 21 which includes an amplifier 22. This amplifier 22 provides a positive signal when the heading of the ship is within a preset yaw zone. The positive signal renders three gain-controlling transistors 35, 64, and 65 conductive, and therefore, the respective gains of an integrator, error and rate channels are set to the low-gain mode. The ship can thus experience normal yawing amplitudes without causing excessive motion of the rudder. (See col. 6, lines 45-55.)

However, when the heading of the ship deviates from the preset yaw zone, Wesner discloses that the heading error signal provided to the threshold circuit 21 exceeds the preset threshold thereby causing the amplifier 22 to provide a negative signal. The negative signal renders the gain-controlling transistors 35, 64 and 65 nonconductive and thereby effecting the high-gain mode of the system. The heading of the ship is therefore rapidly corrected until the ship's heading is once again within the yaw zone determined by the setting of the weather adjust potentiometer 23. (See col. 6, lines 56-64.)

Neither the above-cited portions nor any other portions of Wesner teach or suggest "detecting a period of a yawing motion of the ship; . . . calculating the amount of variations of the period of the yawing motion of the ship based on a plurality of periods of the yawing motions " as recited in independent claims 1 and 9. Wesner merely interrelates the oscillatory yaw frequencies with low pass filters as evidenced by the above-described portions of Wesner. Accordingly, it is respectfully submitted that Wesner cannot detect a period of the yawing motion of the ship nor can it calculate the amount of variations of the period of the yawing motion of the ship based on a plurality of periods of the yawing motions.

Therefore, for at least these reasons, independent claims 1 and 9 are distinguishable from Wesner. Accordingly, Applicants respectfully request that the rejection of claims 1 and 9, based on Wesner, be withdrawn.

35 U.S.C. § 103 REJECTION – Wesner, Kawada

Claims 2-7 and 10-11 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Wesner in view of Kawada et al. (USPN 3,656,043) ("Kawada"). Applicants respectfully traverse.

For a Section 103 rejection to be proper, a *prima facie* case of obviousness must be established. *See M.P.E.P. 2142*. One requirement to establish *prima facie* case of obviousness is that the prior art references, when combined, must teach or suggest all claim limitations. *See M.P.E.P. 2142; M.P.E.P. 706.02(j)*. Thus, if the cited references fail to teach or suggest one or more elements, then the rejection is improper and must be withdrawn.

In this instance, it is respectfully submitted that neither Wesner nor Kawada teaches or suggests each and every limitation of amended independent claims 10 and 11. Claims 10 and 11 recite, *inter alia*, "detecting a period of a yawing motion of the ship; . . . calculating the amount of variations of the period of the yawing motion of the ship based on a plurality of periods of the yawing motions." *Emphasis added.*

As demonstrated above with respect to claims 1 and 9, Wesner fails to teach or suggest the above-identified claim feature of claims 10 and 11. Kawada has not been, and indeed cannot be, relied upon to fulfill at least this deficiency of Wesner. Kawada merely discloses an

automatic maritime steering system used in a giant vessel and requires a characteristic curve as shown in FIG. 1, which has been obtained in advance. The claimed invention, however, is used in small ships and does not use any characteristic curve that has been obtained in advance. Particularly, the claimed invention controls a steering device of a ship to regulate the heading of a ship by means of the arrangement provided in the independent claims in response to an input representative of a deviation of the heading of the ship from a set course.

Thus, *assuming arguendo*, even if there is sufficient motivation to combine Kawada with Wesner, which Applicants respectfully disagree, the combined invention would not provide a control system or method for "detecting a period of a yawing motion of the ship; . . . calculating the amount of variations of the period of the yawing motion of the ship based on a plurality of periods of the yawing motions" as recited in independent claims 10 and 11. Accordingly, it is respectfully submitted that claims 10 and 11 are distinguishable from the combined invention of Wesner and Kawada. Thus, claims 10 and 11 are allowable over Wesner and Kawada.

Claims 2-7 are at least allowable by virtue of their dependency on independent claim 1 and further in view of novel features recited therein. For example, claim 7 recites, *inter alia*, "wherein the behavior detector determines timings at which the heading takes extrema as being a start timing and an end timing of the time range of each of the yawing motion of the ship." As demonstrated above, Wesner merely interrelates the oscillatory yaw frequencies with low pass filters. Thus, the Wesner invention is not provided with a behavior detector determining timings at which the heading takes extrema as being a start timing and an end timing of the time range of each of the yawing motion of the ship.

#### New Claims

New independent claim 12 recites, *inter alia*, "a behavior detector for determining timings at which the heading takes extrema as being a start timing and an end timing of a time range of each of the yawing motion of the ship; a behavior feature value detector for detecting a period of a yawing motion of the ship based on the time range; a variation calculator for calculating the amount of variations of the period of the yawing motion of the ship based on a

plurality of periods of the yawing motions . . .” As demonstrated above in great detail, neither Wesner nor Kawada teach or suggest the above-identified claim features. Thus, it is respectfully submitted that claim 12 is allowable over Wesner and Kawada. New dependent claims 13-15 are at least allowable by virtue of their dependency on claim 12.

### **Conclusion**


In view of the above remarks, it is believed that claims 1-7 and 9-15 are allowable.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Ali M. Imam Reg. No. 58,755 at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.14; particularly, extension of time fees.

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Respectfully submitted,

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